SAS® Visual Analytics 7.1

Getting Started with Exploration and Reporting

Contents

Using This Book

Audience

This book covers the basics of how to explore data and build reports using SAS Visual Analytics. The emphasis is on introductory instructions, how-to hints, and quick reference information.

Requirements

Prerequisites

If you choose to perform the tasks in this book, you need the following software, information, and privileges:

- a link to a working deployment of SAS Visual Analytics 7.1

- a supported web browser (see the SAS support site for supported versions)

- a supported version of the Adobe Flash Player (see the SAS support site for supported versions)

- an account that can log on to the working deployment

- the ReadMetadata and Read permissions for at least one LASR table (without the necessary permissions, you cannot select a data source or access data)

- data exploration and reporting capabilities (without the necessary capabilities, you cannot see certain user interface elements)

■ access to data sources that can be used to obtain data for explorations or reports

System Requirements

Detailed system requirements, including support for additional web browsers, are available on the SAS support site.

Accessibility

For information about the accessibility of this product, see Accessibility Features of SAS Visual Analytics 7.1 at support.sas.com.

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Introduction

About Exploration

Data exploration involves getting to know a data source and then using it to inform your decisions. In exploration, the emphasis is on discovery and ad hoc visualization. Exploration is driven by predefined questions, curiosity, logic, intuition, creativity, and experimentation.

The SAS Visual Analytics Explorer (the explorer) is well suited to the task.

■ The explorer provides fast, highly visual responses so that you can use an iterative approach to exploring the data.

■ The explorer's clean interface and natural interactions minimize distractions so that you can concentrate on the data.

■ The explorer supports a range of visualization and discovery activities so that you can adapt your tactics as insights emerge.

■ The explorer includes advanced analytical tools (such as forecasting, correlations, and fit lines) to further guide and refine the exploration process.

About Reporting

In reporting, the emphasis is on clear, compelling, and widespread communication. Reporting encompasses design, data selection, interactions by viewers (such as brushing and filtering), and viewing (in web and native mobile device formats).

Like the explorer, the reporting interfaces are intuitive and responsive, even for extremely large data sources. Here are the interfaces that you use for reporting:

■ The SAS Visual Analytics Designer (the designer) is for creating and enhancing reports and dashboards. You can print reports to PDF and distribute and e-mail reports to other users.

■ The SAS Visual Analytics Graph Builder (the graph builder) is for creating custom graph objects, which can be made available in the designer for use in reports and dashboards.

■ The SAS Visual Analytics Viewer (the viewer) is for viewing and interacting with reports in a web browser.

■ SAS Mobile BI is for viewing and interacting with reports on mobile devices.

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Basic Tasks

Introduction

This chapter provides step-by-step instructions to guide you through basic tasks. The purpose is to provide a brief, hands-on orientation to a few of the many possible workflows for exploration and reporting.

Explore a Data Source

To explore a data source:

1   In a web browser, open the SAS Visual Analytics home page (at your equivalent of http://*<serverName>*:*<portNumber>*/SASVisualAnalyticsHub).

2   In the **Create Content** area, click **Create Exploration**.

3   In the SAS Visual Analytics Explorer window, click **Select a Data Source**.

4   In the Open Data Source window, select a data source or click a link in the **Import Data** panel to add a new data source. Click **Open**.

> **Note:** For more details about importing data, see the *SAS Visual Analytics: User's Guide*.

5   Drag any data item from the left pane onto the center of the screen. The explorer assigns the data item to a role and displays an initial chart as the new exploration's first visualization.

> **TIP** An exploration contains all of the visualizations, filters, and data settings from an explorer session.

6   Extend, enhance, and refine the exploration (as little or as much as you like). For ideas, see "Cheat Sheet for Explorations" on page 10.

> **TIP** In exploration and reporting, access to data is always Read-Only, so feel free to experiment—you will not break anything.

> **TIP** If your session times out due to inactivity, any unsaved changes are lost. It is a good idea to save your work frequently.

7   To save the exploration, select **File** ▸ **Save** from the main menu. In the Save As window, select **My Folder**, and enter a name. Click **Save**.

> **TIP** Each data exploration is saved in its own project, which is called an exploration.

8   In the upper left corner of the explorer, click 🏠.

9   On the home page, notice that the new exploration is in the **Recent** list in the **My Content** area.

Share an Exploration

As you explore your data, you might want to share your findings. One way to share the contents of an exploration is to export some or all of its visualizations as a report.

To export an exploration as a report:

1   On the SAS Visual Analytics home page, double-click an exploration to open it.

2   Select **File** ▶ **Export** ▶ **Exploration as Report** from the explorer's main menu.

3   If your exploration contains more than one visualization, use the Export as Report window to select the visualizations that you want to export. Click **OK**.

> **TIP** A few types of content (decision trees, network diagrams, word clouds, and treemaps that display additional levels) cannot be exported. To share such content, export it as a PDF or save it as an image.

4   In the Save As window, select a shared folder, and accept the default name. Click **Save**.

5   In the Export as Report window, select the check box to **Open the report now**. Click **OK**.

You can also browse to open the report. In the upper left corner of the explorer, click 🏠. In the **My Content** area of the home page, notice that the report is not in the **Recent** list. Only objects that you create or open are in the **Recent** list. If you want to navigate to the report, click **Browse**.

The preceding steps export content to SAS metadata as a report. The following table lists some other ways to share the contents of an exploration. First, make sure that the exploration is saved in a shared folder so that it is accessible to other users.

Table 2.1 *Additional Methods for Sharing Exploration Content*

Task	How to Initiate
E-mail a saved exploration as a link	From the explorer's main menu, select **File** ▶ **E-mail**.
Export as a PDF	From the explorer's main menu, select **File** ▶ **Export** ▶ **Exploration as PDF**.
Save as an image	In a visualization's toolbar, click ⬇ , and select **Export Image**.

Create a Report

1 On the SAS Visual Analytics home page, click **Create Report**. The designer opens with a new, empty report.

2 Drag an object, such as a **Bar Chart** ▮▮, from the left pane onto the canvas in the center of the screen.

3 To add data:

   a On the **Data** tab (in the left pane), click **Select a data source**. In the Add Data Source window, select a data source or click a link in the **Import Data** panel to add a new data source. Click **Add**.

   Note: For more details about importing data, see the *SAS Visual Analytics: User's Guide*.

   b Drag a category ▥ from the **Data** tab onto the **Category** label (at the bottom of the bar chart).

   TIP A category has alphanumeric or date values that can be used as discrete groupings (for example, the values in a product category might include shoes and belts).

c Drag a measure ◆ from the **Data** tab onto the bar chart.

> **TIP** A measure has numeric values that can be used as numbers (for example, the values in a sales measure might specify the quantity of units sold).

4 Extend, enhance, and refine the report (as little or as much as you like). For ideas, see "Cheat Sheet for Reports" on page 12.

> **TIP** If your session times out due to inactivity, any unsaved changes are lost. It is a good idea to save your work frequently.

5 To save the report, select **File** ▶ **Save** from the main menu. In the Save As window, select **My Folder**, and enter a name. Click **Save**.

6 In the upper left corner of the designer, click ♠.

7 On the home page, notice that the new report is in the **My Content** area.

View a Report

To open a report in the web viewer, right-click on the report on the home page, and then click **View** in the pop-up window.

To open a report in a mobile viewer, launch the SAS Mobile BI app, connect to a server, navigate to the report, and open it. Instructions vary by device. See the "Viewing Reports on a Mobile Device" chapter in *SAS Visual Analytics: User's Guide*, and videos on the SAS support site.

> **TIP** The SAS Mobile BI app for iPad is available in the iTunes App Store. The Android app is available from Google Play.

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Specific Tasks

Introduction

This chapter highlights core functionality in the explorer and designer. For most tasks, there are multiple ways to begin. Here, one way to initiate each task is documented. If you ever get stuck or have questions, some of the text right inside the interface might help.

> **TIP** For comprehensive instructions, access the *SAS Visual Analytics: User's Guide* from the **Help** menu or the SAS support site.

Cheat Sheet for Explorations

Task	How to Initiate in the Explorer
Add variables to a visualization.	Drag the data items onto the visualization in the center of the screen (from the **Data** pane on the left).
Add another data source.	From the main menu, select **Data** ▶ **Add Data Source**.
Switch to a different visualization type.	From the main menu, select **Visualization** ▶ *type*.
Subset data for the entire exploration.	Right-click on a data item, and select **Add as Filter on** *data-source*.
Subset data for one visualization.	Select the visualization, right-click on a data item, and select **Add as Filter on Visualization**.
Subset data in a chart by inclusion or exclusion.	Select a data value (for example, a bar in a bar chart), right-click, and select either **Include Only Selection** or **Exclude Selection**. (For a line chart, **Show markers** must be selected on the **Properties** tab.)
Sort elements within a chart or table.	Right-click on a data item in a chart axis or table, and select **Sort**.
View a visualization's data.	Right-click on the visualization, and select **Show Details**.
Use a different aggregation method.	Right-click on a measure in a chart axis or table, and select **Aggregation**.
Use a distinct count as a measure.	In the **Data** pane, right-click on a category (or date), and select **Create Distinct Count**.
Create a derived item for a measure.	In the **Data** pane, right-click on a measure, and select **Create** ▶ *item type*.

Task	How to Initiate in the Explorer
Apply a correlation and fit line.	Right-click on a scatter plot or heat map, and select **Fit Line** ▶ *type*. (For a scatter plot, there must be at least two measures and no grouping categories. For a heat map, both the X and Y axes must be measures.)
Predict future values.	In a line chart where a date or time data item is assigned to the category role (and no other category roles are used), right-click, and select **Show Forecast**.
Create multiple visualizations.	From the main menu, select **Visualization** ▶ **New**.
Organize your visualizations.	From the main menu, select **View** ▶ **Manage Visualizations**.
See how selected data in one visualization corresponds to other visualizations.	From the main menu, select **View** ▶ **Data Brushing**. (Not all visualizations support cross-visualization highlighting.)
Create a data item from an expression.	From the main menu, select **Data** ▶ **New Calculated Item**. (Calculations use unaggregated data.)
Create an aggregated measure from an expression.	From the main menu, select **Data** ▶ **New Aggregated Measure**.
Set up drill-down functionality.	From the main menu, select **Data** ▶ **New Hierarchy**.
Set up a geographic data item.	In the **Data** pane, right-click on a data item that contains geographic information, select **Geography**, and assign a geographic role.
Display a geographic map with a bubble plot overlay.	Drag a geographic data item ⊕ onto an empty visualization.
Set up a document collection for a word cloud with text analytics.	First, specify a data item as the unique row identifier for the exploration. The unique row identifier must have a unique value for each row of the data source. Right-click the data item in the **Data** pane, and then select **Set as Unique Row Identifier**. In the **Data** pane, right-click a category, and then select **Document Collection**.

Task	How to Initiate in the Explorer
Display a word cloud with text analytics.	Drag one or more document collections 📄 onto the visualization in the center of the screen (from the **Data** pane on the left).
Delete an exploration.	Click **Home**, and then click **Manage** (next to **My Content** or **Other Content**).
Explore a different data source.	From the main menu, select **File ▶ New Exploration**.
Replace a data source.	On the top of the **Data** pane, click ▼ , and then select **Change Data Source**.
Add or view exploration-level comments.	From the main menu, select **File ▶ Exploration Comments**.
Add or view comments for the selected visualization.	From the main menu, select **Visualization ▶ Comment**. The **Comments** tab is in the right pane.
Duplicate the selected visualization.	From the main menu, select **Visualization ▶ Duplicate**.
Specify whether to automatically update the visualization after each change is made.	Use the **Auto-Update** check box at the bottom of the right pane to specify this option. If this option is disabled, you can click **Update** to update the visualization when you are ready.

Cheat Sheet for Reports

TIP In general, data-related tasks are initiated from the leftmost panes, and presentation-related tasks are initiated from the rightmost pane.

Data Task	How to Initiate in the Designer
Add another data source.	On the **Data** tab, click 📑.

Data Task	How to Initiate in the Designer
Insert a data display object (such as a table, graph, or gauge).	Drag the object (from the **Objects** tab) onto the report in the center of the screen.
Show or hide report objects.	On the top of the **Objects** tab, click ☰, and then select **Show or Hide Objects**. You can use this feature to specify which report objects are displayed on the **Objects** tab, including displaying report objects that are not displayed by default.
Use a distinct count as a measure.	On the **Data** tab, right-click on a category (or date) data item, and select **Create Distinct Count**.
Change the format of a measure, date, or numeric category.	On the **Data** tab, select the measure, and then click the triangle at the end of the **Format** row (below the list of data items).
Create a data item from an expression.	On the **Data** tab, click ☰, and select **New Calculated Item**. (Calculations use unaggregated data.)
Create an aggregated measure from an expression.	On the **Data** tab, click ☰, and select **New Aggregated Measure**.
Create a new custom category.	On the **Data** tab, right-click on the category or measure data item that you want to use to create the new custom category. Select **New Custom Category**.
Set up drill-down functionality.	On the **Data** tab, click ☰, and select **New Hierarchy**.
Hide a data item.	On the **Data** tab, click ☰, and select **Show or Hide Items**.
Create a custom sort.	On the **Data** tab, right-click a category data item and select **New Custom Sort**.
Exclude a subset of data from the entire data source.	On the **Data** tab, click ☰, and select **New Data Source Filter**.
Incorporate a stored process.	From the main menu, select **Insert ▶ Other ▶ Stored Process**.

Data Task	How to Initiate in the Designer
Get basic statistics about all measures.	On the **Data** tab, click ▼ , and select **Measure Details**.
Get additional statistics about a particular measure.	On the **Data** tab, click ▼ , select **Measure Details**, and select the measure (in the Measure Details window).
Change the data source for the current report.	On the **Data** tab, click ▼ , and select **Change Data Source**.
Show multiple aggregations (or multiple formats) for a data item.	Right-click on the data item, select **Duplicate Data Item**, and then change the aggregation (or format) of the new data item.
Reuse an existing visualization or report object in a separate report.	From the main menu, select **View** ▶ **Imports**. The **Imports** tab is in the left pane.
Use a predefined geography data item.	On the **Data** tab, right-click on an item that contains geographic information, and then select **Geography**. Select a predefined geographic role, such as US ZIP Codes.
Create a custom geography data item.	On the **Data** tab, right-click on an item that contains geographic information, and then select **Geography** ▶ **Custom**. In the Geography window, assign measures that contain location information. (For example, you might assign Latitude and Longitude as the respective measures for a Region category.)
Display a geographic map with a bubble plot overlay, coordinates, or colored regions.	From the **Other** list on the **Objects** tab, drag **Geo Bubble Map**, **Geo Coordinate Map**, or **Geo Region Map** onto a report in the center of the screen. From the **Data** tab, drag a geographic data item onto the map.
Create the percentage of total for a measure.	On the **Data** tab, right-click on a measure (with a current default target aggregation of Sum or Count), and select **Create** ▶ **Percent of Total**. A new aggregated measure is created.
Cancel slow-running queries for a report object.	Position your mouse over the progress indicator for the report object and click the icon.

Data Task	How to Initiate in the Designer
Specify whether to automatically update the report after each change is made.	Use the **Auto-Update** check box above the canvas to specify this option. If this option is disabled, you can click ↺ to update the report when you are ready.

Presentation Task	How to Initiate in the Designer
Edit a report's description.	At the top of the **Properties** tab, select the report from the drop-down list.
Format a chart's title.	Select the chart, and then make changes on its **Properties** tab.
Add a trend line to a list table.	In a table, right-click on a column, and select **Add Sparkline**. (The data source must include a date data item.)
Change a bar chart's orientation.	Select the bar chart, and then change **Direction** on its **Properties** tab.
Change a chart's colors or styles.	Select the chart, and then make changes on its **Styles** tab.
Set up report-level conditional highlighting.	On the **Display Rules** tab, select the report, and then click **New**.
Set up object-level conditional highlighting.	On the **Display Rules** tab, select a report object. For example, to populate intervals for a KPI, click the **Display Rules** tab, and select the gauge.
Create a reusable pattern of gauge intervals and colors.	From the main menu, select **View** ▶ **Shared Rules**. The **Shared Rules** tab is in the left pane. Click 🖻.
Apply a shared display rule to a new gauge.	From the main menu, select **View** ▶ **Shared Rules**. The **Shared Rules** tab is in the left pane. Drag the rule onto the gauge.
Add a new section (tab) to a report.	At the top of the canvas, click ✚.

Presentation Task	How to Initiate in the Designer
Add an info window to a report.	Click ▼ on the **Sections** tab, and then select **Display as Info Window**. In the SAS Visual Analytics Viewer, when the user double-clicks data in a report object that has an info window, then the additional information is displayed in a new window.
Create a scrollable area.	From the main menu, select **Insert ▶ Containers ▶** *container type*.
Use a different canvas size.	Above the canvas, from the drop-down list, click 🔳, ▣, or ▣.
Change your default canvas size.	From the main menu, select **File ▶ Preferences**.
Overlap one report object on top of another.	On a section's **Properties** tab, select **Precision** from the **Layout** drop-down list. Drag report objects to the appropriate locations. In the toolbar, use the **Arrange** and **Sizing** menus to make adjustments.
Set up view-time filters (prompts).	From the **Objects** tab, drag a control object onto the drop zone at the top of a report or section. Then, drag a category data item onto the control object.
Set up view-time interactions (where an action on one object affects other objects).	From the main menu, select **View ▶ Interactions**. The **Interactions** tab is in the right pane. Click **New ▶ Interaction**. (Not all objects support interactions.)
Add or view comments.	From the main menu, select **View ▶ Comments**. The **Comments** tab is in the right pane. (Only report-level comments are supported.)
Add or view alerts for a report object.	From the main menu, select **View ▶ Alerts**. The **Alerts** tab is in the right pane.
Specify a preference for receiving alert notifications.	Select **File ▶ Preferences**, and then click **General** in the left pane.
Delete alerts for a report object.	On the **Alerts** tab, select the alert that you want to delete and click 🗑.

Presentation Task	How to Initiate in the Designer
Display totals for list tables.	On the **Properties** tab, select **Show totals**.
Display totals and subtotals for crosstabs.	On the **Properties** tab, make selections to show subtotals and totals for columns and rows.
Create basic and advanced filters.	From the main menu, select **View ▶ Filters**. The **Filters** tab is in the right pane. Select a data item or **Advanced** from the drop-down list, and then click **Add Filter** and select values.
Create links to reports, sections, info windows, or external URLs.	From the main menu, select **View ▶ Interactions**. The **Interactions** tab is in the right pane. Click **New**, and then select the type of link that you want to create.
Rank values.	From the main menu, select **View ▶ Ranks**. The **Ranks** tab is in the right pane.
E-mail reports.	Select **File ▶ E-mail**.
	Note: A user's e-mail address must be stored in metadata to be displayed in the Manage subscribers list on the **Subscription and Notification** tab.
Print a report to PDF.	Select **File ▶ Print to PDF**.
Distribute reports on a schedule.	Select **File ▶ Distribute Reports**.
Delete a report.	Click **Home**, and then click **Manage** (next to **My Content** or **Other Content**).

About the Availability of Actions

The following factors affect the availability of actions:

■   Your capabilities (for example, if you do not have export capabilities, the export options in the explorer's **File** menu are not available to you).

- Your location in SAS Visual Analytics. For example, some application features are available only if you are designing a report.

- The currently selected object (for example, list tables do not have ranges).

- Whether data has been defined (for example, you must add a data source before you can define filters).

- Whether a data item is already in use (for example, you cannot change a data item's role while it is incorporated in a bar chart as a category).

4

Quick Reference

Data Sources

Explorations and reports (and each section within a report) can have multiple data sources.

Data that is used for explorations and reports must be loaded into memory on the SAS LASR Analytic Server. In addition to loading SAS data sets, you can load other data that is accessible to a SAS/ACCESS engine and import local Excel or delimited (CSV) files.

> **TIP** An administrator can perform ETL and aggregation functions before loading data. For more information, see the data preparation chapters in the *SAS Visual Analytics: User's Guide*.

Anatomy of a Report

A report's content can include the following types of objects:

■ Objects that display data or results, including tables, graphs, geo maps, gauges, and stored processes.

■ Objects that provide static content, including images (for example, a logo) and text (for example, a link to a web page).

■ Objects that enable viewers to interact with a report (these objects are called controls).

A report's structure is provided by sections and containers:

■ Sections separate content onto different tabs or pages. Designers and viewers can see the contents of only one section at a time.

■ Vertical, horizontal, stack, and prompt containers group objects within a section. Containers can hold more content than what fits on the screen. A horizontal or vertical container has a scrollable space, and a stack container displays objects as if they were in a slide deck. Designers and viewers can use the scroll bar or control bar in the report to see additional content. Prompt containers are used to group prompt controls.

Gallery
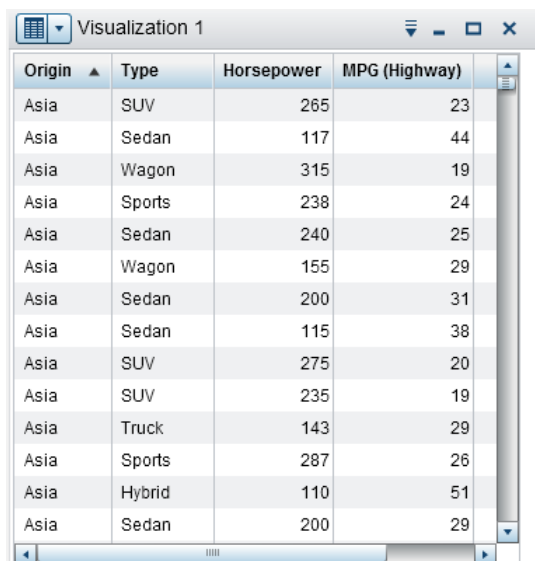
This is an illustrated guide to displaying data and results. Many of the features are available in two contexts:

- as visualizations (the building blocks of explorations) in the explorer

- as report objects (the building blocks of reports) in the designer and viewers

Any differences in availability are driven by the purpose of each interface. Explorations emphasize discovery. Reports and dashboards emphasize presentation.

> **TIP** Use the following images for orientation. Actual appearance and functionality are affected by the underlying data, any styles that you apply, and the interface that you are using. (Some of the following images are from the explorer, others are from the designer).

Table 4.1 *Displaying Data and Results*

Origin ▲	Type	Horsepower	MPG (Highway)
Asia	SUV	265	23
Asia	Sedan	117	44
Asia	Wagon	315	19
Asia	Sports	238	24
Asia	Sedan	240	25
Asia	Wagon	155	29
Asia	Sedan	200	31
Asia	Sedan	115	38
Asia	SUV	275	20
Asia	SUV	235	19
Asia	Truck	143	29
Asia	Sports	287	26
Asia	Hybrid	110	51
Asia	Sedan	200	29

A table (also known as a list table) is a two-dimensional representation of data. Values are arranged in unlabeled rows and labeled columns. A table cannot use a hierarchy.

In the designer, list tables contain aggregated data (unless the **Show detail** data property is selected). You can add sparklines to a column (if the data source contains a date data item). In the explorer, tables contain raw data.

Availability:

✔ Supported in the explorer.

✔ Supported in the designer and viewers.

A crosstab (also known as a crosstabulation table) shows an aggregate metric for the intersections of two or more categories. In a crosstab, categories are typically displayed in both the columns and the rows. Each cell value represents the aggregated measure from the intersection of the categories in the cell's row and column. A crosstab uses less space than a traditional table and is easier to read because data is grouped both horizontally and vertically. A crosstab can use a hierarchy. Frequency is displayed when there are no measures in the crosstab.

Availability:

✓ Supported in the explorer.

✓ Supported in the designer and viewers.
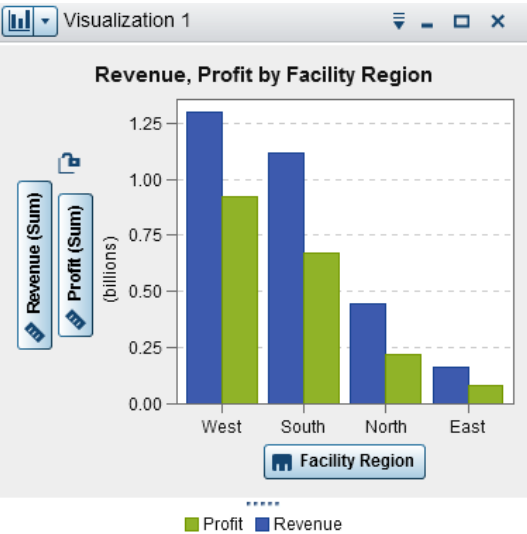
A bar chart consists of vertical or horizontal bars that represent quantitative data. Use bar charts to compare data that is aggregated by the distinct values of a category.

You can apply grouping and create lattices.

Availability:

✓ Supported in the explorer.

✓ Supported in the designer and viewers.
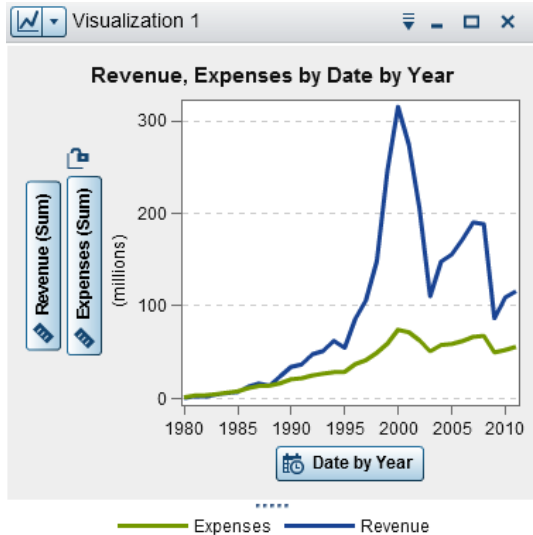
A line chart shows the relationship of one variable to another, often as movements or trends in the data over a period of time. Line charts summarize source data, and typically are used to show how values change over time. You can apply grouping and create lattices.

In the explorer, line charts support time series. From a time series, you can generate a forecast analysis that enables you to predict future values for the series and visualize the probability range for those values.

Availability:

✓ Supported in the explorer.

✓ Supported in the designer and viewers.
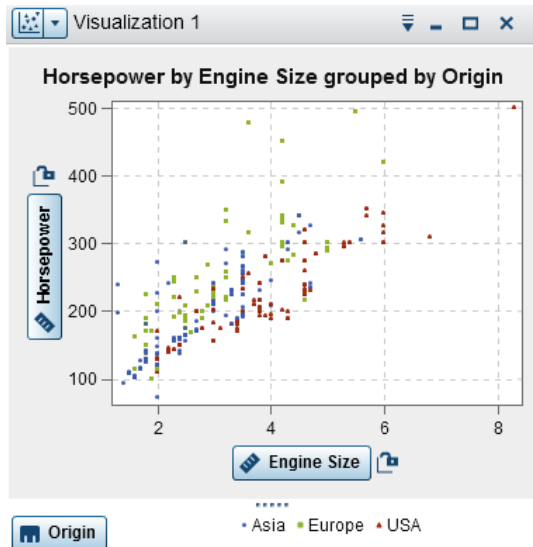
A scatter plot is a two-dimensional plot that shows the joint variation of two data items. Each marker (represented by symbols such as dots, squares, or plus signs) represents an observation. The marker position indicates the value for each observation. Use a scatter plot to examine the relationship between numeric data items. You can apply grouping. (In the designer, grouping is called "color.")

In the explorer, you can apply statistical analysis with correlation and fit lines. When you apply more than two measures to a scatter plot, a scatter plot matrix compares each pairing of measures.

Availability:

✓ Supported in the explorer.

✓ Supported in the designer and viewers.
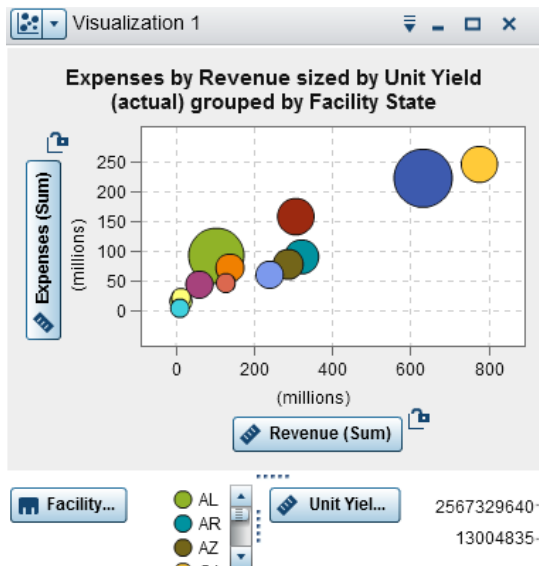
A bubble plot displays the relationships among at least three measures. Two measures are represented by the plot axes, and the third measure is represented by the size of the plot markers. Each bubble represents an observation. A bubble plot is useful for data sets with dozens to hundreds of values. You can apply grouping and create lattices. You can use color to represent an additional measure and animate the bubbles to display changes in the data over time.

Availability:

✔ Supported in the explorer.

✔ Supported in the designer and viewers.
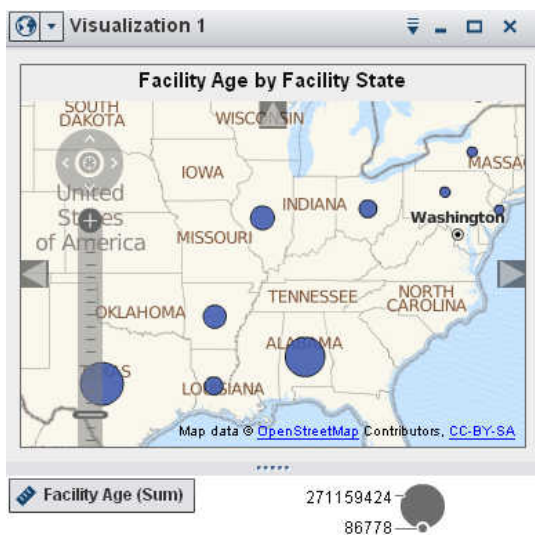
A geo bubble map is a bubble plot that is overlaid on a geographic map. Each bubble is located at a geographic location or at the center of a geographical region. A geo bubble map requires a data item that contains geographical information and is assigned to a geography role.

Availability:

✔ Supported in the explorer (in a geo map visualization, click ⛋ , and then select **Map Style ▶ Bubbles**).

✔Supported in the designer and viewers.
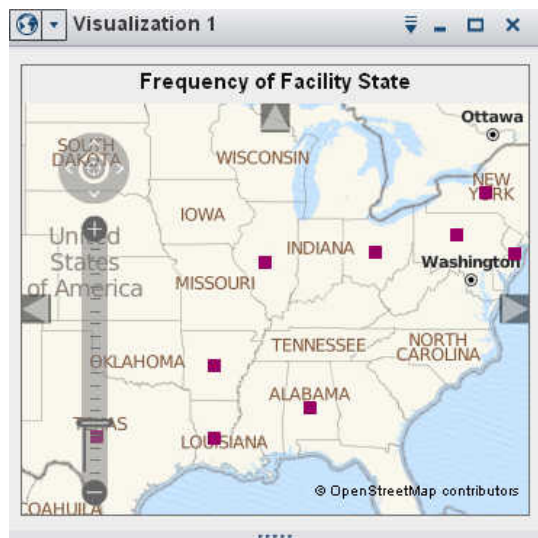
A geo coordinate map is a simple scatter plot that is overlaid on a geographic map. Each point is located at a geographic location or at the center of a geographical region. A geo coordinate map requires a data item that contains geographical information and is assigned to a geography role.

Availability:

✔ Supported in the explorer (in a geo map visualization, click ⛛ , and then select **Map Style** ▶ **Coordinates**).

✔ Supported in the designer and viewers.
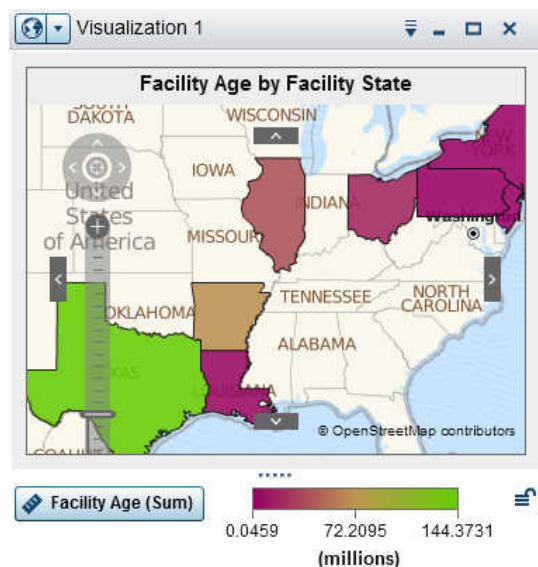
A geo region map (also known as a choropleth map) is a two-dimensional map that uses colors to represent different categories or levels of magnitude. You can fill geographical boundaries (for example, a country or a state) on a map with color, based on measure values that are aggregated to the level defined by a geographical boundary. A geo region map requires a data item that contains geographical information and is assigned to a geography role.

Availability:

✔ Supported in the explorer (in a geo map visualization, click ⛛ , and then select **Map Style** ▶ **Regions**).

✔ Supported in the designer and viewers.
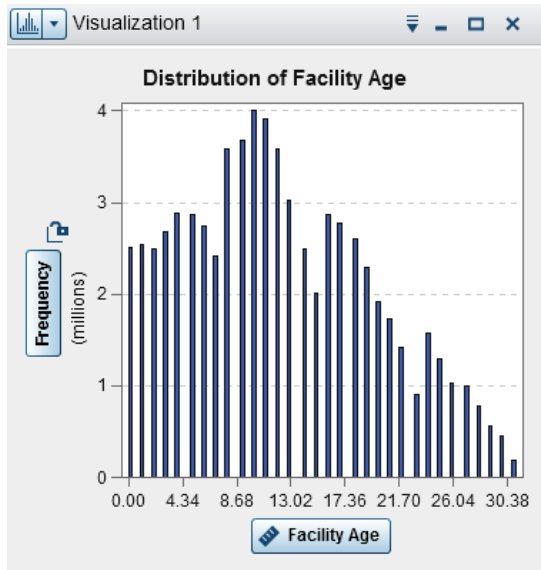
A histogram displays the distribution of values for a single measure.

In the explorer, you can select the bar orientation. You can select whether the values are displayed as a percentage or as a count.

To add a histogram to a report, create it in the explorer, and export it as a report object.

Availability:

✔ Supported in the explorer.

◓ Limited support in the designer and viewers.
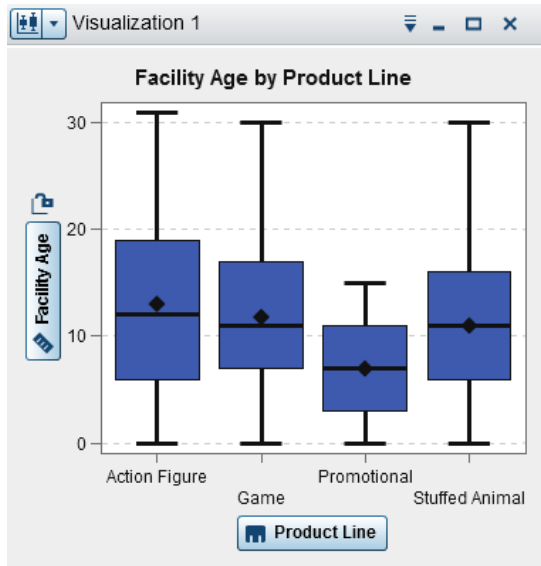
A box plot displays the distribution of values for a single measure using a box and whiskers. The size and location of the box indicate the range of values that are between the 25th and 75th percentile. Additional statistical information is represented by other visual features.

In the explorer, you can create lattices and specify whether the average (mean) value and outliers are displayed for each box.

To add a box plot to a report, create it in the explorer, and export it as a report object.

Availability:

✔ Supported in the explorer.

◓ Limited support in the designer and viewers.
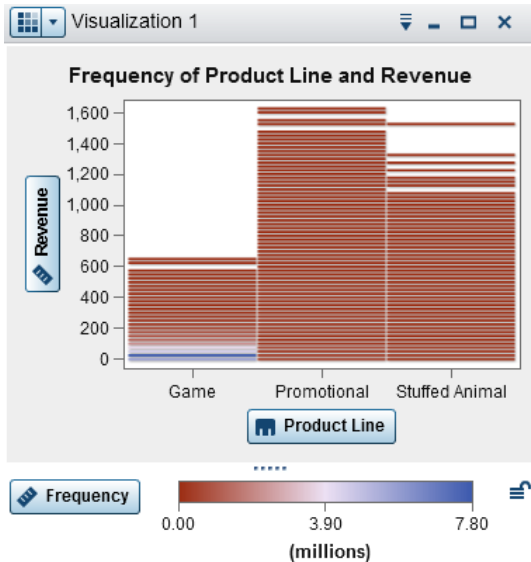
A heat map displays the distribution of values for two data items using a grid of colored cells. If you do not assign a measure to the color data role, then a cell's color represents the frequency of each intersection of values. If you assign a measure to the color data role, then a cell's color represents the measure value of each intersection of values.

To add a heat map to a report, create it in the explorer, and export it as a report object.

Availability:

✔ Supported in the explorer.

⬤ Limited support in the designer and viewers.
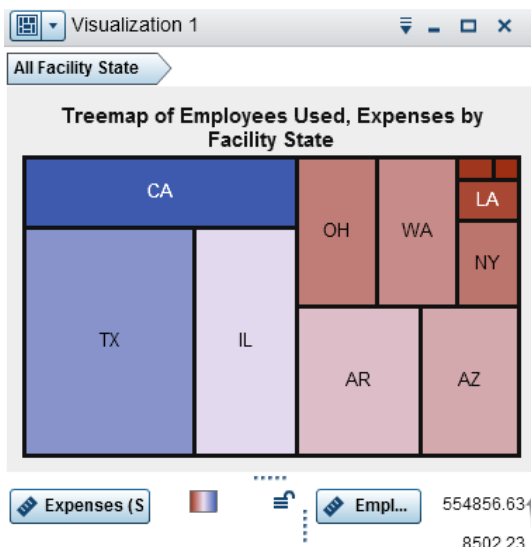
A treemap displays your data as a set of rectangles (called tiles). Each tile represents a category or a hierarchy node. The color of each tile represents the value of the first measure. The size of each tile represents the value of the second measure. For example, a sales data treemap might have tile sizes that represent the number of orders and tile colors that are derived from color gradients that represent sales.

Availability:

✔ Supported in the explorer.

✔ Supported in the designer and viewers.
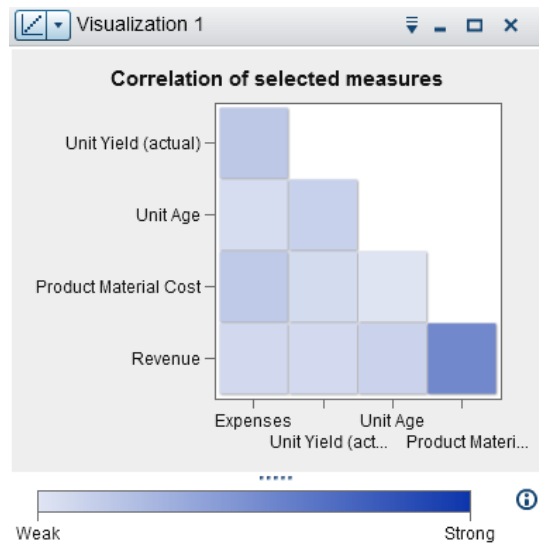
A correlation matrix displays the degree of correlation between measures as a series of colored rectangles. The color of each rectangle indicates the strength of the correlation.

To add a correlation matrix to a report, create it in the explorer, and export it as a report object.

Availability:

✔ Supported in the explorer.

⬤ Limited support in the designer and viewers.
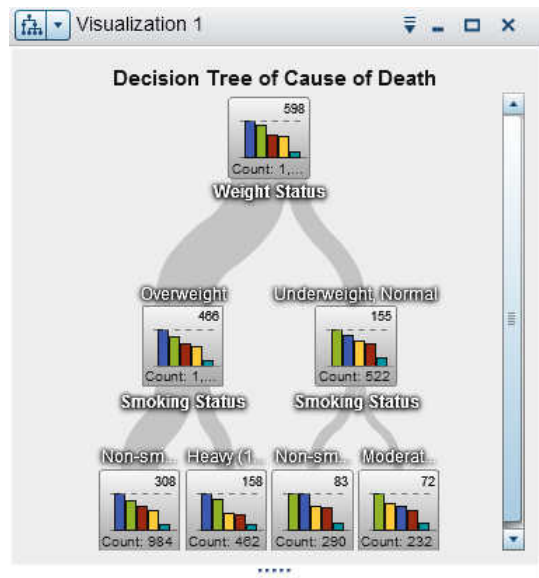
A decision tree displays a series of nodes as a tree, where the top node is the target data item and each branch represents a split in the values of a predictor data item. A split enables you to see which value of the predictor data item corresponds to a different distribution of the value in the target data item.

Availability:

✔ Supported in the explorer.

○ Not supported in the designer or viewers.
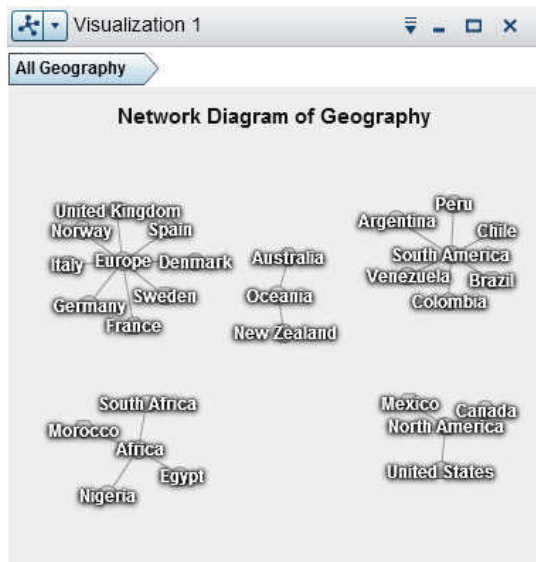
A network diagram displays a series of linked nodes. A network diagram displays the relationships between the values of categories or hierarchy levels. You can indicate the values of measures through the sizes and colors of the nodes and the node links.

Availability:

✔ Supported in the explorer.

○ Not supported in the designer or viewers.
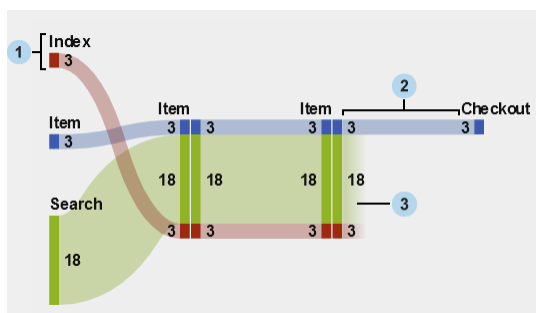
A Sankey diagram displays a series of linked nodes, where the width of each link indicates the frequency of the link or the value of a measure.

Availability:

✔ Supported in the explorer.

○ Not supported in the designer or viewers.

A word cloud displays a set of category values as text, grouped in a cloud-like shape. Depending on the type of word cloud and your data roles, the size of each word in the cloud can indicate the relevance of the word to a topic, the frequency of the word in a category, or the value of a measure. In the explorer, you can use text analytics in a word cloud to identify topics and terms that appear together in your data and to analyze the sentiment of the documents in a topic.

Availability:

✔ Supported in the explorer.

✔ Supported in the designer and viewers.
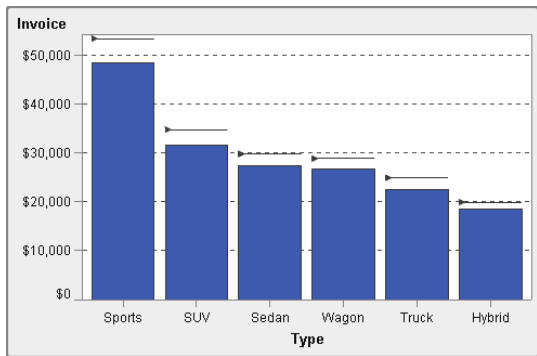
A targeted bar chart is a bar chart that has pointers to target values. In this example, the pointers appear above each bar.

Availability:

○ Not supported in the explorer.

✔ Supported in the designer and viewers.
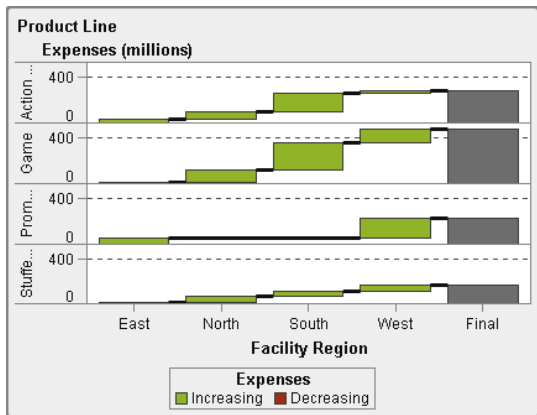
A waterfall chart (also known as a progressive bar chart) shows how the initial value of a measure increases or decreases during a series of operations or transactions. The first bar begins at the initial value, and each subsequent bar begins where the previous bar ends. The length and direction of a bar indicate the magnitude and type (positive or negative, for example) of the operation or transaction. The resulting chart is a stepped cascade that shows how the operations or transactions lead to the final value of the measure.

Availability:

○ Not supported in the explorer.

✔ Supported in the designer and viewers.
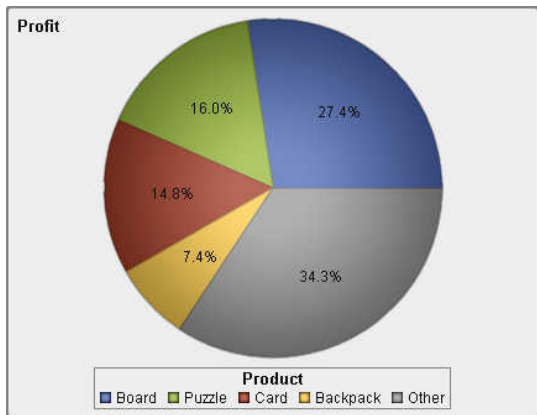
A pie chart is a circular chart that is divided into slices by radial lines. Each slice represents the relative contribution of each part to the whole.

Availability:

○ Not supported in the explorer.

✔ Supported in the designer and viewers.
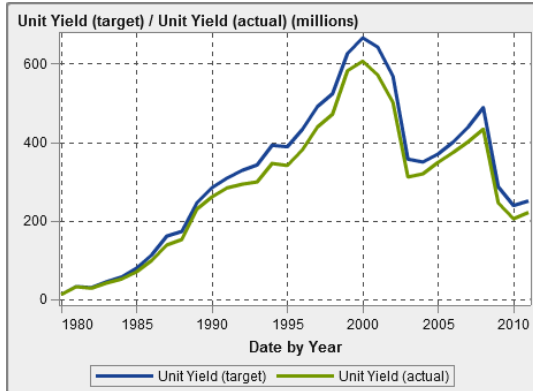
A time series plot shows an ordered sequence of values that are observed at equally spaced time intervals. A time series plot requires a date or date time category data item that is continuous.

Availability:

✔ Supported in the explorer as a line chart.

✔ Supported in the designer and viewers.
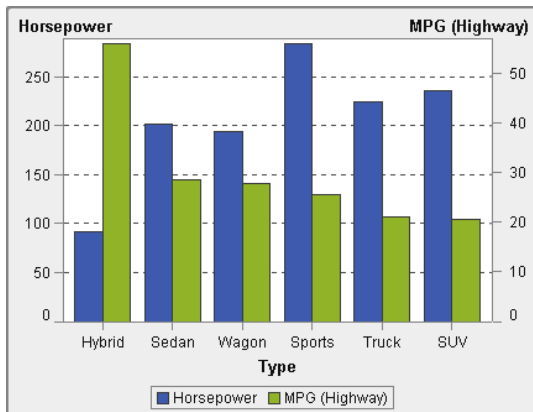
A dual axis bar chart is a variation of the bar chart that has two measures. A measure is on each axis.
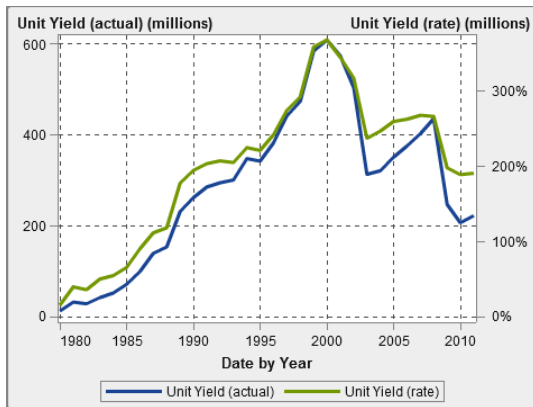
Availability:

○ Not supported in the explorer.

✔ Supported in the designer and viewers.
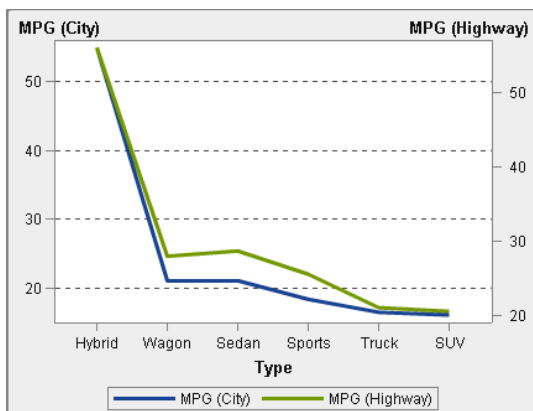
A dual axis line chart is a variation of the line chart that has two measures. A measure is on each axis.

Availability:

○ Not supported in the explorer.

✔ Supported in the designer and viewers.
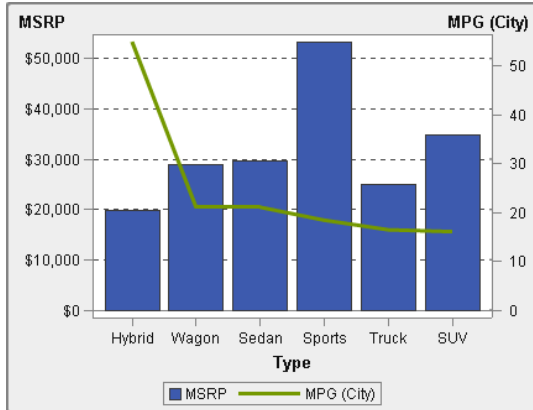
A dual axis bar-line chart is a variation of the bar chart that has two measures. A measure is on each axis, and the bar chart is overlaid by a line chart.

Availability:

○ Not supported in the explorer.

✓ Supported in the designer and viewers.

A dual axis time series plot is a variation of the time series plot that has two measures. A measure is on each axis.

Availability:

○ Not supported in the explorer.

✓ Supported in the designer and viewers.
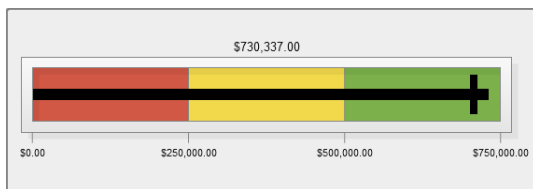
A bullet gauge is a dashboard indicator (also known as a key performance indicator (KPI) chart) that compares an actual value to a target value in intervals. The actual value is indicated by an inset bar.

To add a bullet gauge, add a gauge report object, and then use the **Type** property to specify that you want a bullet gauge.

Availability:

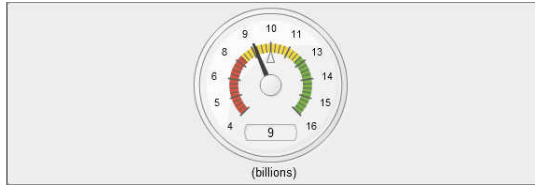○ Not supported in the explorer.

✓ Supported in the designer and viewers.
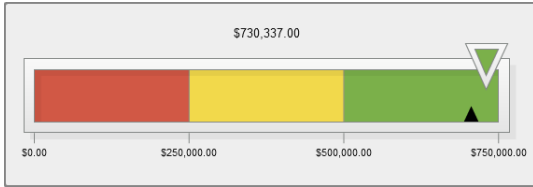
A slider gauge is a dashboard indicator (also known as a KPI chart) that compares an actual value to a target value in intervals. The actual value is indicated by an arrow.

To add a slider gauge, add a gauge report object, and then use the **Type** property to specify that you want a slider gauge.

Availability:

○ Not supported in the explorer.

✔ Supported in the designer and viewers.
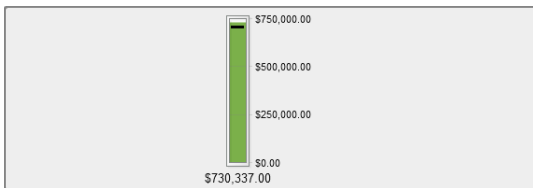
A thermometer gauge is a dashboard indicator (also known as a KPI chart) that compares an actual value to a target value in intervals. The actual value is indicated by a bar.

To add a thermometer gauge, add a gauge report object, and then use the **Type** property to specify that you want a thermometer gauge.

Availability:

○ Not supported in the explorer.

✔ Supported in the designer and viewers.
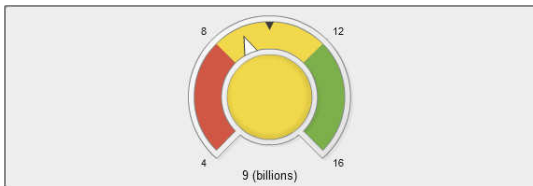
A dial gauge is an arc-shaped dashboard indicator (also known as a KPI chart) that compares an actual value to a target value and compares them in intervals. The actual value is indicated by an arrow that points outward from the inner circle.

To add a dial gauge, add a gauge report object, and then use the **Type** property to specify that you want a dial gauge.

Availability:

○ Not supported in the explorer.

✔ Supported in the designer and viewers.

A speedometer gauge is a circular dashboard indicator (also known as a KPI chart) that compares an actual value to a target value and compares them in intervals. The actual value is indicated by the larger pointer.

To add a speedometer gauge, add a gauge report object, and then use the **Type** property to specify that you want a speedometer gauge.

Availability:

○ Not supported in the explorer.

✔ Supported in the designer and viewers.

The Home Page
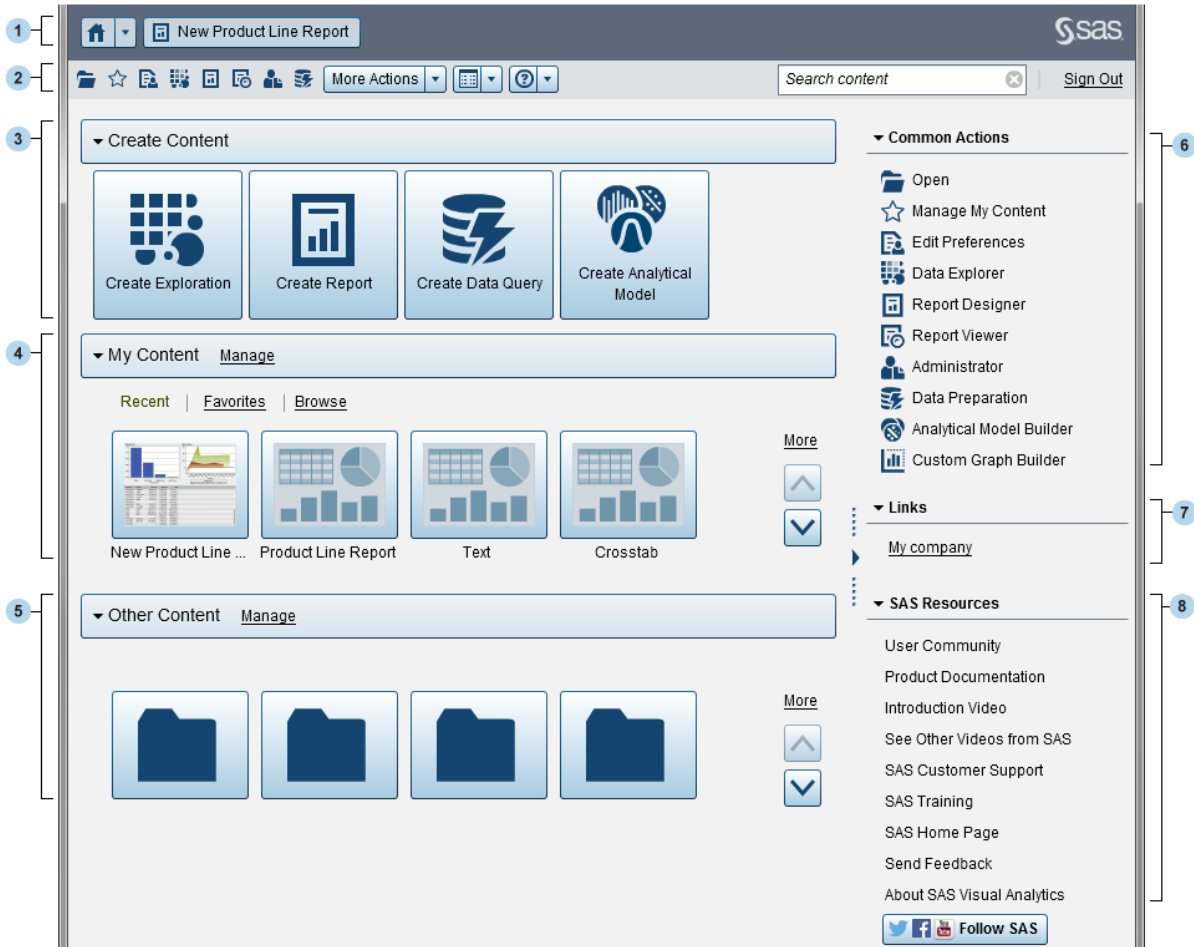
1 The application bar enables you to return to the home page and to access other parts of SAS Visual Analytics and other SAS applications that integrate with the home page. You can also access applications in your recent history. Buttons are displayed for each open application.

2 The menu bar offers common tasks and search functionality.

3 The **Create Content** area has icons for creating new explorations, reports, and data queries.

4 The **My Content** area provides several ways to navigate to certain types of content.

5 The **Other Content** area displays predefined lists of content.

6 The **Common Actions** section is an alternate initiation point for certain actions.

7 The **Links** section provides links to any pages that you have bookmarked.

8 The **SAS Resources** section has links to the introductory video for SAS Visual Analytics, to the SAS website, and to social media.

The Explorer
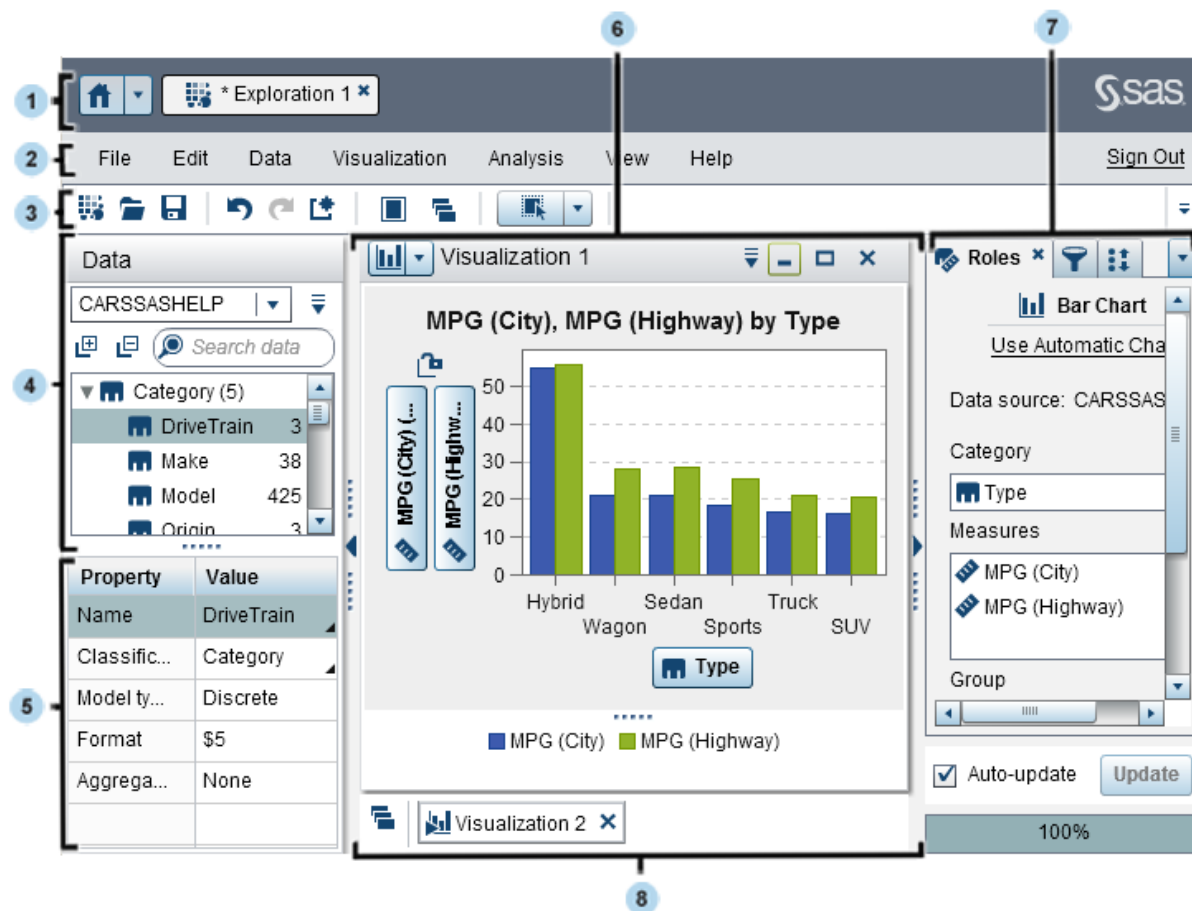
1   The application bar enables you to return to the home page and to access other parts of SAS Visual Analytics and other SAS applications that integrate with the home page. You can also access applications in your recent history. Buttons are displayed for each open application.

2   The menu bar offers common tasks, such as creating a new exploration.

3   The toolbar enables you to manage your explorations and visualizations.

4   The data pane enables you to manage the data that is used in your visualizations.

5   The data properties table enables you to set data item properties.

6   The workspace displays one or more visualizations.

7   The right pane's tabs enable you to set properties and data roles, subset data, manage global parameter values, and use comments.

8   The dock contains any minimized visualizations.

The Designer

1   The application bar enables you to return to the home page and to access other parts of SAS Visual Analytics and other SAS applications that integrate with the home page. You can also access applications in your recent history. Buttons are displayed for each open application.

2   The menu bar offers common tasks for the current report or section.

3   The toolbar enables you to manage and print your reports and expand the workspace.

4   The tabs in the left pane enable you to work with new report objects, data, imported report objects, and shared rules.

5   The canvas is the workspace for building a report. The appearance of the canvas is affected by the report theme.

A report can have multiple sections, which can each be accessed by using the tabs at the top of the canvas. You can change the report view by clicking the icons at the top of the canvas.

Above the canvas, there is an **Auto-update** check box. You can clear this check box so that you can design your report without waiting for a query to finish.

There is an area at the top of the canvas on which you can drag and drop filter controls and then assign categories to create report-level prompts. If you do not want to see this area, clear the **Show report prompts** check box.
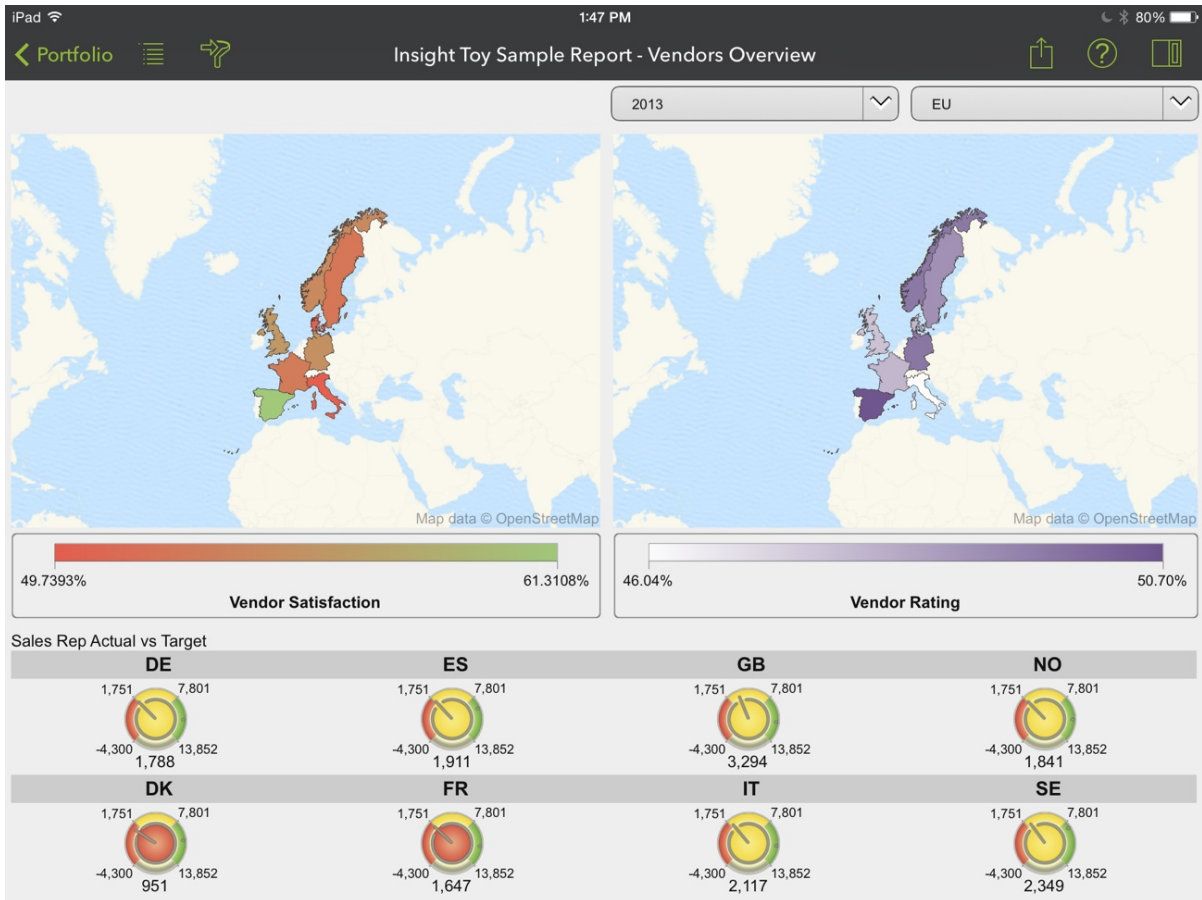
6   The tabs in the right pane enable you to work with details about a report and its report objects.

The Viewers

Here is an example of a report in the web viewer:
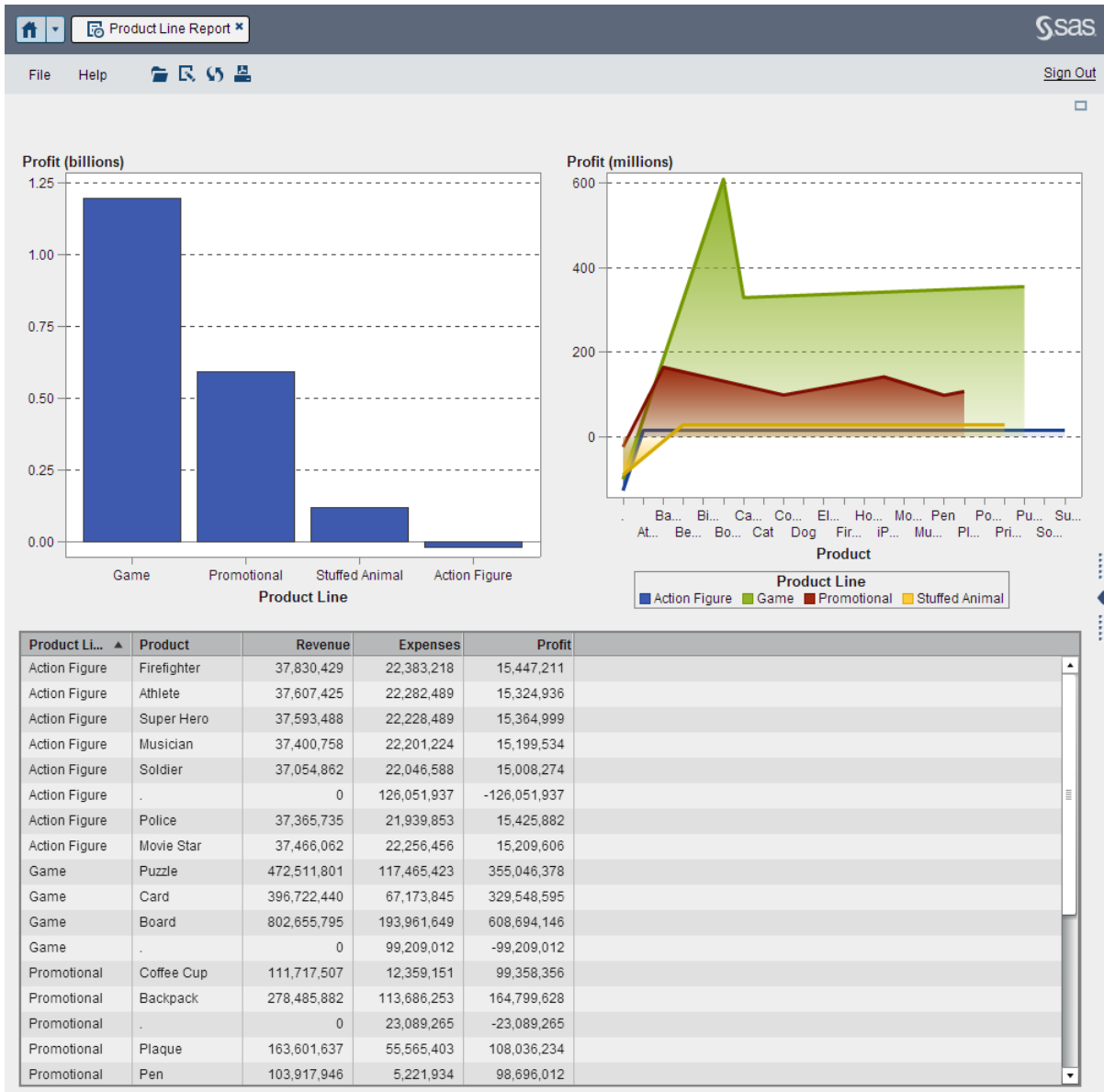
The mobile viewers are native to each device. For example, here is a screen capture from the SAS Mobile BI app for iPad:

Where to Find Additional Documentation

The most current technical resources for SAS Visual Analytics are available on the SAS Visual Analytics page on the SAS support site.

Your experience with SAS software should be as smooth as possible. Please submit your feedback.